

Cohen Middle School  
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Elmira Heights, NY 14903  
734-5078

Name: \_\_\_\_\_ Date: February 25, 2020 \_\_\_\_\_

<p>Math: <i>Properties</i></p> <p><i>nb 7<sup>e</sup>, 8</i> <i>hmk 2sided wksht.</i></p>
<p>Social Studies:</p> <p>- Section IV Han Dynasty</p> <p>HW: Paper and Moveable type TEST ON FRIDAY</p>
<p>ELA: <i>Daily Warm Up</i></p> <p><i>"A Blessing"</i></p> <p><i>Comprehension Check Page 140</i></p>
<p>Science</p> <ol style="list-style-type: none"><li>① Complete Page 9-10 using <u>your</u> graph (include claim)</li><li>② Score your graph</li><li>③ Crash Course Kids Video: Land and Water</li></ol>
<p>Computer Apps/ Technology</p> <p><i>Hand in Sci.NB (Pg 5-10)</i> <i>w/ graph</i></p>



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## Chinese Inventions - Paper & Movable Type Printing

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Invention is an interesting thing. Sometimes, an invention was developed to fulfill a specific need. Other times, it was simply a chance discovery. Looking back in history, there are two Chinese inventions that fell into the first category. They are paper and movable type printing.

Long before paper was invented, the ancient Chinese carved characters to record their thoughts on tortoise shells, animal bones, and stones. Since those "writing boards" were heavy and not easy to carry around, they switched to writing on bamboo, wooden strips, and silk. The new alternatives were clearly better, but they were either still heavy or very costly. Then, during the Western Han dynasty (202 B.C. - 8 A.D.), paper made its debut. Its inventor is unknown.



When paper first came out, it was not easy to produce in large quantities. And its quality was poor. Several decades later, a palace official named Tsai Lun (also spelled as Cai Lun) had a breakthrough in the papermaking process. He experimented with different materials and eventually settled on using tree bark, rags, and bits of rope to produce paper. He presented his first batch of paper to the emperor of the Eastern Han dynasty in 105 A.D. Tsai Lun's technique of making paper became an instant hit! It was quickly introduced to Korea and other countries nearby. In 751 A.D., Arabs learned the technique from the Chinese soldiers they captured in a war. They passed it on to Europe and, eventually, other parts of the world.

With the invention of paper, the ancient Chinese began to have books. But to have a book, they needed to manually copy the text onto sheets of paper word by word. The entire process was time-consuming and prone to errors. To solve the problems, they first wrote the text on a piece of paper and glued it facedown onto a wooden board. Then they carved out the characters or even pictures, and made the board a printing plate. Each plate was a page of a book. Once they were done with all the pages, they brushed ink evenly on a printing plate and carefully laid a piece of paper on top of it. They lifted up the paper and let it dry. They repeated this step until they finished printing the entire book. This printing method was called block printing. It first appeared in China during the Sui dynasty (581 A.D. - 618 A.D.) Its inventor is unknown.

Without a doubt, the block printing technique helped the publishing industry thrive. But it had its drawbacks. First it took time to carve out the entire text of a book. Second, it was impossible to correct a mistake without throwing away the whole plate and starting it all over again. Third, it was difficult to store printing plates, given that their wooden material was termites' favorite food. Seeing all these problems about block printing, a smart man named Bi Sheng (also spelled as Pi Sheng) of the Northern Song dynasty (960 A.D. - 1127 A.D.) came up with an idea in the 1040's. Instead of carving the entire book onto wooden plates, he carved one Chinese character at a time onto a small block of clay. After he made enough blocks bearing different Chinese characters, he burned them and turned them into durable ceramics. He assembled the characters on an iron plate with a kind of detachable glue. After he

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finished printing that page, he broke up the characters and re-assembled them to form the content of another page. The new approach was called movable type printing.

The printing techniques, both block printing and movable type printing, were first introduced to Korea, Japan, and other countries around China. Later on, they were brought to Central Asia, Persia, and Egypt. In 1455, a German named Johannes Gutenberg published the first book in Europe using movable type printing. The book he published was a Latin Bible. Because the Bible he made had forty-two lines in two columns on each page, it was also called the "Forty-Two-Line Bible."

Though Johannes Gutenberg might not have learned about the Chinese invention when he came up with movable type printing, it was evident that his creation was more than 400 years behind Bi Sheng's. So, to be fair, the true inventor of the movable type printing technique is really Bi Sheng, not Johannes Gutenberg.

Paper and the movable type printing technique are two crucial Chinese inventions. They represented two significant milestones in the development of civilization. Together, they rocked the world -- literally!

#### Chinese Inventions - Paper & Movable Type Printing

### Questions

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- \_\_\_\_\_ 1. Who invented paper?
  - A. Nobody knows.
  - B. Tsai Lun
  - C. Bi Sheng
  - D. Johannes Gutenberg
  
- \_\_\_\_\_ 2. Tsai Lun did not invent paper. He simply improved the way of making paper.
  - A. True
  - B. False
  
- \_\_\_\_\_ 3. When was paper invented?
  - A. During the Eastern Han dynasty
  - B. During the Sui dynasty
  - C. During the Western Han dynasty
  - D. During the Western Zhou dynasty
  
- \_\_\_\_\_ 4. Which of the following was **NOT** a material the ancient Chinese used to write on before paper was invented?
  - A. Candle stick
  - B. Tortoise shell
  - C. Stone
  - D. Silk

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- \_\_\_\_\_ 5. Who invented movable type printing?
- A. Nobody knows
  - B. Johannes Gutenberg
  - C. Bi Sheng
  - D. Tsai Lun
- \_\_\_\_\_ 6. The block printing technique used a more durable material than the movable type printing technique.
- A. False
  - B. True
- \_\_\_\_\_ 7. What year did Johannes Gutenberg publish the first book in Europe using movable type printing?
- A. 1455
  - B. 1454
  - C. 1546
  - D. 1544
- \_\_\_\_\_ 8. When was the movable type printing technique invented?
- A. During the Western Han dynasty
  - B. During the Southern Song dynasty
  - C. During the Northern Song dynasty
  - D. During the Tang dynasty
- \_\_\_\_\_ 9. Who introduced the technique of making paper to Europe?
- A. Indians
  - B. Mongols
  - C. Japanese
  - D. Arabs
- \_\_\_\_\_ 10. What was Johannes Gutenberg's first publication also called?
- A. The Forty-Three-Line Bible
  - B. The Forty-Five-Line Bible
  - C. The Forty-Two-Line Bible
  - D. The Forty-Four-Line Bible



**China Review Sheet 2016**  
**TEST FRIDAY FEBRUARY 28, 2019**

**Geography:**

- China is separated from its neighbors to the North by the Gobi Desert.
- China's northeastern and eastern sections receive more rain due to monsoons.
- The two main rivers flow from east to west because the mountain ranges run that direction.

**Shang Dynasty:**

- Chinese society changed under the Shang, social order became more organized.
- Social Structure:
  - Kings, nobles, artisans, farmers and slaves.
- Shang rulers moved the capital several times to avoid floods or attacks.
- The Shang were the first people in china to develop a writing system.

**Zhou Dynasty:**

- Lasted longer than any other dynasty
- Zhou kings were given the power to lead by the mandate of heaven.
- Zhou leaders would grant land in return for loyalty
- Zhou leaders eventually lost loyalty of the lords.

**Confucius**

- Influential teacher in China raised as a peasant.

- **Wanted to restore family order and social harmony**
  - **Five basic relationships.**
- **Moral leadership not laws would bring order to china**
- **All his works are in a book called the analects.**

### **Daoists**

- **Believed all people should live in harmony with nature.**
- **Most famous teacher was Laozi, taught people should not try to gain wealth.**

### **Legalists**

- **Believed everyone was basically bad**
- **Everyone Needed to be controlled**

### **Qin Dynasty**

- **First emperor was a legalist**
- **Emperor Shi Huangdi did not share power with the lords.**
- **Divide china into districts, each with its own governor.**
- **Started construction of the Great wall of China**

### **Han Dynasty**

- **Liu Bang first peasant to become an emperor**
- **Earned the peoples trust especially soldiers and peasants.**
- **Emperor Wudi took power, and made Confucianism the official government policy.**
- **Wudi also made peasants higher ranking in the social class.**
- **Silk Road a major trade route through China ended at the Mediterranean Sea.**



Use your graph ↓

**Analyzing Data: Claim, Evidence & Reasoning:**

- 1. **Which material heated up the fastest?** \_\_\_\_\_  
amount of increase: \_\_\_\_\_
- 2. Did this match your prediction?      YES    or    NO
- 3. **Which material held the temperature the longest?** \_\_\_\_\_  
How many minutes at this same temperature? \_\_\_\_\_
- 4. **Which material cooled off the quickest?** \_\_\_\_\_  
Amount of decrease? \_\_\_\_\_

Started in class you finish w/ your data ↓

**Focus Question 1: *How do different earth materials transfer energy on the surface of the earth?***

**Different earth materials transfer energy on the surface of the earth at different rates. When we put sand, soil, water, and air under the heat lamp they all had a starting temperature of 20\*.**

**After \_\_\_\_\_ minutes... we noticed \_\_\_\_\_ increased to \_\_\_\_\_ while the \_\_\_\_\_ only increased \_\_\_\_\_.**

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Video ↓  
**WORD BANK (STUDY)**

**WATCH** Crash Course Kids: Land and Water: <https://www.youtube.com/watch?v=7vTfyAMu6G4>

**Radiant energy (radiation) differential heating energy radiate**

1. **Differential Heating** the different rates at which earth materials heat up
2. **Radiate** the transfer of energy from a hotter object/particle to a colder object; movement of atoms.
3. **ENERGY** the ability to do work.
4. **Radiation (radiant Energy)** the way energy is moved from the sun through the air in waves /rays to the earth materials

**CONTENT:**

- The **SUN** is the major source of energy that heats the **ATMOSPHERE**;
- The **TROPOSPHERE** is the layer of the atmosphere where weather happens.
- Energy transfers (or moves) from the sun to another material through waves or rays it is called **radiation**
- **heat transfers** to materials differently depending on their **properties**
- The **thermometer** measures the level of **kinetic energy** of different materials as **heat moves** around.

**Mod.4 Lesson 8 Math Properties (6.EE. 3)**

**Your Outcomes**

- You will understand that a letter in an expression or an equation can represent a number. When that number is replaced with a letter, an expression or an equation is stated.
- You will discover the commutative properties of addition and multiplication, the additive identity property of zero, and the multiplicative identity property of one. They determine that  $g \div 1 = g$ ,  $g \div g = 1$ , and  $1 \div g = \frac{1}{g}$ .

**VOCABULARY:**

- **properties-** are statements that are true for any number
- **numerical expression-** a combination of numbers & operators *example: 3·2+4·4*
- **algebraic expression-** must have at least (minimum) of 1 *number*, 1 *variable*, and 1 *operation*  
*example: a + 7*
- **equivalent expression-** are expressions that simplify to an equal value when numbers are substituted for the variables of the expression (*each expression has the same value*) *example: 6·10 = 10·6 or a+b = b+a*

**PROPERTIES**

<p align="center"><b><u>COMMUTATIVE</u></b></p> <p>The order in which 2 #'s are Added or multiplied and does <b>NOT</b> change their sum or product</p> <p align="center"><b>Examples:</b></p> <p align="center">7+9=9+7    7·9=9·7 a+b=b+a    a·b=b·a</p>	<p align="center"><b><u>ASSOCIATIVE</u></b></p> <p>The way in which 3 or more #'s are grouped when they are added or multiplied does <b>NOT</b> change their sum or product</p> <p align="center"><b>Examples:</b></p> <p align="center">3+(9+4)=(3+9)+4 a+(b+c)=(a+b)+c 3·(9·4)=(3·9)·4 a·(b·c)=(a·b)·c</p>
<p align="center"><b><u>IDENTITY</u></b></p> <p>The sum of an addend and 0 is the addend. The product of a factor and 1 is the factor</p> <p align="center"><b>Examples:</b></p> <p align="center">13+0=13    7·1=7 a+0=0    a·1=a</p>	<p align="center"><b><u>PROPERTY OF ZERO</u></b></p> <p align="center">**only for multiplication**</p> <p>Any factor (number) multiplied by zero equals zero</p> <p align="center"><b>Examples:</b></p> <p align="center">29·0=0    a·0=0</p>



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1. Put your name on wksht

2. Homework in agenda WKSHT

3. Table of contents:

p. 7 & 8 L8 Properties

4. Go over hmwk with partner.

5. Work on nb page 6



*Properties of Addition and Multiplication*

*Created by Deb Maeder  
Middle School Math  
Christ the King Middle School*



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*National Standards Met for Middle School Math:*

*Number Sense*

*Students will identify, communicate, and compute all numbers and analyze the relationships between them.*

*Objective :*

*Students will be able to correctly define three properties of addition and multiplication.*

*Students will be able to correctly identify three properties of addition and multiplication.*

*Instructions:*

*Using the "shade" tool, all properties will be identified and explained. Students will have an opportunity to participate in an evaluation tool at the conclusion of the lesson.*

# Vocabulary

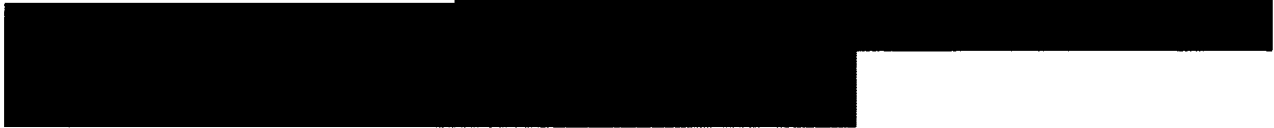
identity property- any number times 1 is that number

zero property- anything times 0 equals 0

associative property- the grouping of factors can change but the product stays the same

commutative property- you can multiply 2 factors in either order and get the same product

distributive property-

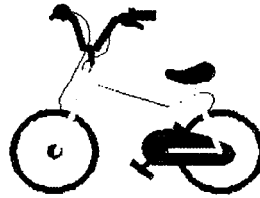


*What is a Property?*

*Is it a piece of land?*



*Is it something you own like your bike?*



*No, it's actually a rule.*

*A mathematical property is a rule  
that is ALWAYS followed when  
working in a mathematical situation.*

## *Identity Property*

*How do you know when someone is talking to you?*

*They say your name, or say your "identity".*

*The Identity Property works the same way. If a number starts out in the problem, it will stay the same way in the answer. The answer says the name of the number!!*

*Let's see how it works.....*

*Do these problems.....*

$$6 + 0 =$$

$$22 + 0 =$$

$$415 + 0 =$$

*SO.....*

*Identity Property Of Addition  
Any number added to zero will stay the same.*

*3+0 will ALWAYS equal 3  
5 + 0 will ALWAYS equal 5*

*Does this property work for anything else???*

*Let's see.....*

*Can I start with a number, lets say 5, and do any other operation to that number and end up with 5?*

*I can!!*

*5 × 1 will ALWAYS equal 5!!*

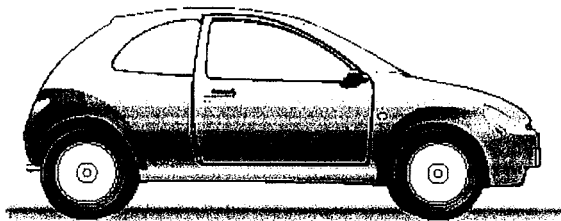
*SO.....*

*Identity Property of Multiplication  
Any number multiplied by 1 will ALWAYS equal  
that number.*

## *Commutative Property*



*Do your parents commute to work???*



© Oxford designers & illustrators 2004

*Most of our parents, drive back and forth to work everyday. This is called commuting to work.*

*What does this have to do with math?????*



## Vocabulary

**Commutative Property of Addition:** The property that states when the order of two addends (numbers) is changed, the sum is the same.

☑ Example:  $4 + 5 = 5 + 4$

☒ Non-example:  $(4+5)+1=4+(5+1)$

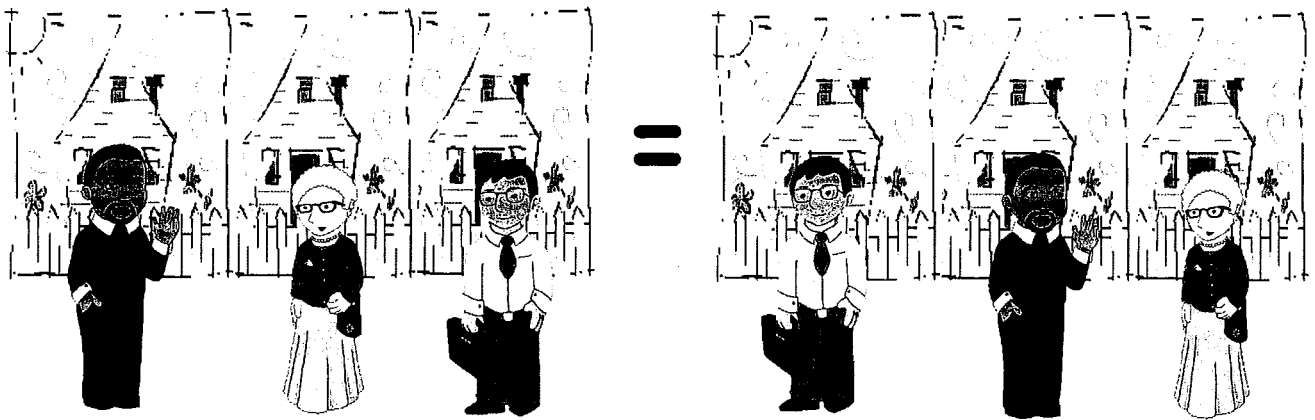
**Commutative Property of Multiplication:** The property that states when the order of two factors is changed, the product is the same.

☑ Example:  $4 \times 5 = 5 \times 4$

☒ Non-example:  $(4 \times 5) \times 1 = 4 \times (5 \times 1)$

## Think Community!

The people in your community can move to different houses, but they still add together to equal your community.



Only the order has changed...

$$1 + 2 + 3 = 3 + 2 + 1$$

*Commutative Property says that a number can move around in a problem and the answer stays the same.*

*Lets see how this works.....*

*Do these make the same answer???*

$$4 + 5 =$$

$$5 + 4 =$$

$$16 + 32 =$$

$$32 + 16 =$$

*SO.....*

*The Commutative Property of Addition says that any added numbers can change places in the problem and the sum will stay the same.*

*Let's see if this rule work for any other operations?*

*Does it work for division?*

$$32 \div 8 = \quad 8 \div 32 =$$

*Does it work for subtraction?*

$$14 - 6 = \quad 6 - 14 =$$

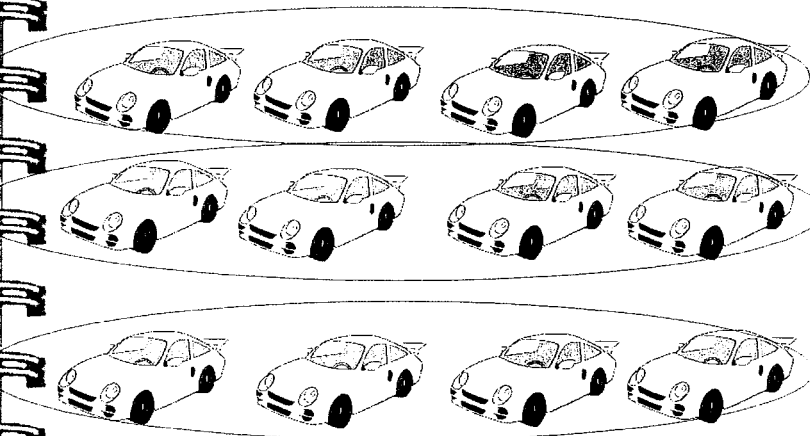
*Does it work for Multiplicaiton?*

$$7 \times 3 = \quad 3 \times 7 =$$

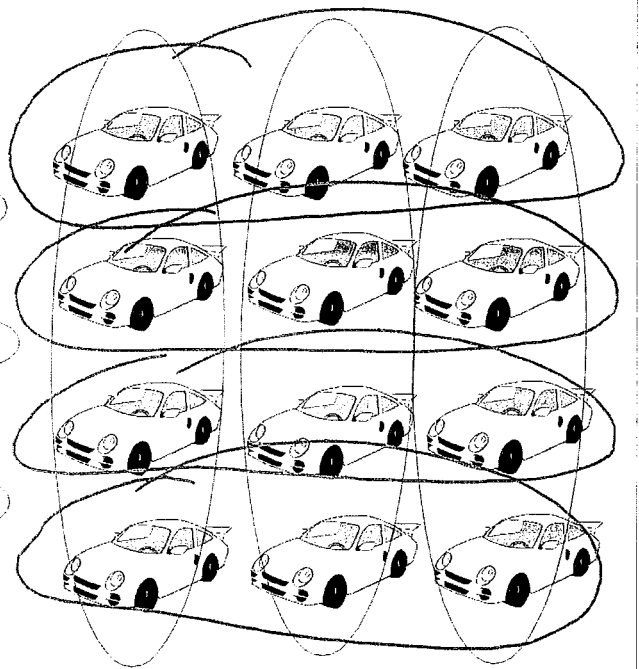
SO.....

*The Commutative Property of Multiplication says that any multiplied numbers can change places in the problem, but the product will stay the same.*

The commutative property states that you can multiply two factors in any order and get the same product.



$$3 \times 4 = 12$$



$$4 \times 3 = 12$$

Fill in the blanks with the correct number to show the commutative property. Remove the boxes to check your answers.

$$\underline{\quad} + 32 = 32 + 68$$



$$(23 + 17) = (17 + \underline{\quad})$$



$$7 \times 8 = \underline{\quad} \times \underline{\quad}$$



6

2

7

1

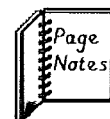
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8

7


4

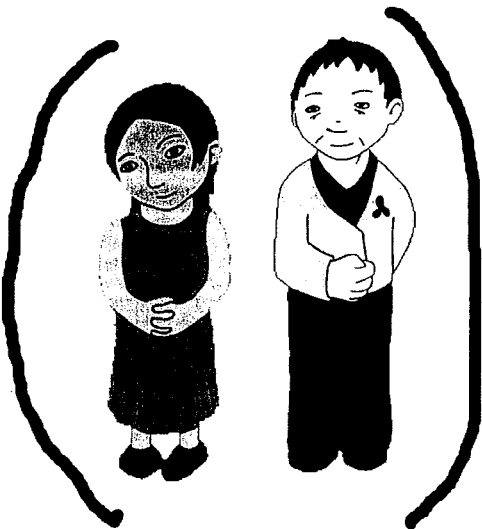
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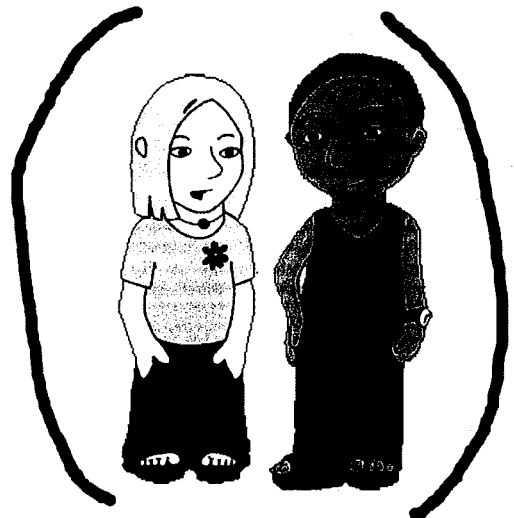
## Associative Property

What does it mean to associate with someone?

Neighborhood Friends 



School Friends



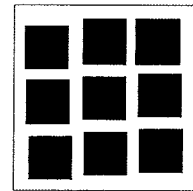
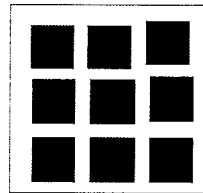
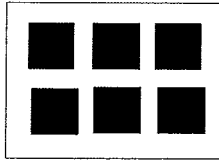
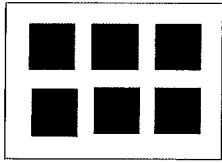
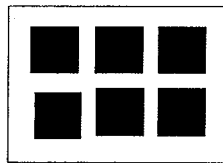
No matter with whom you associate or hang out, you are still the same person, right?

Watch this video, then discuss these problems using the associative property.

Associative Properties

$$(A + B) + C = A + (B + C)$$

$$(AB)C = A(BC)$$



$$(2 \times 3) \times 3 =$$
$$6 \times 3 =$$

$$2 \times (3 \times 3) =$$
$$2 \times 9 =$$





### *Associative Property*

*No matter which numbers are grouped together with the same operations, the answer will still be the same.*

*Let's see how this works.....*

$$(3 + 8) + 10 = \qquad 3 + (8 + 10) =$$

*SO.....*

*The Associative Property of Addition says that as long as all the numbers are added together, the grouping symbols can be rearranged and the sum will stay the same.*

*Do you suppose this works for any other operations???*

*You Are Right!! It works for multiplication too....let's see how...*

$$5 \times (4 \times 2) =$$

$$(5 \times 4) \times 2 =$$

SO.....

*The Associative Property of Multiplication says that as long as all the numbers are multiplied, the grouping symbols can move and the product will stay the same.*

# PROPERTIES OF OPERATIONS

Expressions follow certain rules called properties

Any time we use a property it will result in an equivalent expression.

	WITH VARIABLES	PROVE IT WITH NUMBERS
Additive & Multiplicative Identity	$p + 0 = p$	$p = 12$ $p + 0 = p$ $12 + 0 = 12$ $12 = 12$
	$p \cdot 1 = p$	$p = 12$ $p \cdot 1 = p$ $12 \cdot 1 = 12$ $12 = 12$
Commutative Property	$p + r = r + p$	$p = 12, r = 5$ $p + r = r + p$ $12 + 5 = 5 + 12$ $17 = 17$
	$p \cdot r = r \cdot p$	$p = 12, r = 5$ $p \cdot r = r \cdot p$ $12 \cdot 5 = 5 \cdot 12$ $60 = 60$
Associative Property	$(p+r)+s = p+(r+s)$	$p = 12, r = 5, s = 3$ $(p+r)+s = p+(r+s)$ $(12+5)+3 = 12+(5+3)$ $17+3 = 12+8$ $20 = 20$
	$(p \cdot r) \cdot s = p \cdot (r \cdot s)$	$(p \cdot r) \cdot s = p \cdot (r \cdot s)$ $(12 \cdot 5) \cdot 3 = 12 \cdot (5 \cdot 3)$ $60 \cdot 3 = 12 \cdot 15$ $180 = 180$
Zero Product	$p \cdot 0 = 0$	$p = 12$ $p \cdot 0 = 0$ $12 \cdot 0 = 0$ $0 = 0$

Additive & Multiplicative Identity

Commutative Property

Associative Property

Zero Product



Show how the properties of operations apply to the following expressions.

PROPERTY	PROBLEM	USE THE PROPERTY
Commutative Property of Addition	$18 + q$	$q + 18$
Zero Product Property	$c(0)$	$0$
Multiplicative Identity Property	$x \cdot 1$	$1$
Commutative Property of Multiplication	$a \cdot b$	$b \cdot a$
Additive Identity Property	$19 + 0$	$19$
Zero Product Property	$0 \cdot g$	$0$
Commutative Property of Addition	$7 + 9$	$9 + 7$
Multiplicative Identity Property	$1 \cdot 45$	$45$
Associative Property of Addition	$(5 + 6) + 8$	$5 + (6 + 8)$
Additive Identity Property	$h + 0$	$h$
Commutative Property of Multiplication	$13 \cdot 6$	$6 \cdot 13$

Match each of the expressions in column 1 with an equivalent expression in column 2.

COLUMN 1	COLUMN 2
$(a + b) + c$	$a \cdot 1$
$a \cdot b \cdot c$	$a + (b + c)$
$a$	$b + c + a$
$c + b + a$	$b \cdot a \cdot c$

COLUMN 1	COLUMN 2
$g + 0$	$0$
$e \cdot (f \cdot g)$	$g$
$e + f + g$	$g + f + e$
$g \cdot 0$	$(e \cdot f) \cdot g$

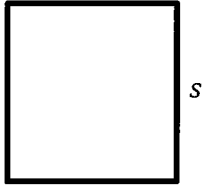
Summarize today's lesson:



4 3 2 1 Name \_\_\_\_\_ Date \_\_\_\_\_

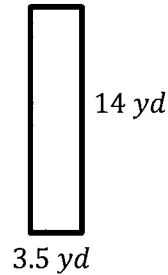
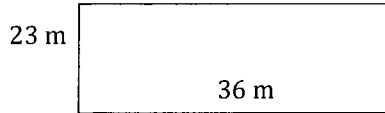
LEVEL Homework: NYS CCSS Mod 4.C Lesson 7: Replacing Letters with Numbers 6.EE.A.2c/A.4  
 USE your notes pages 5 & 8.

1. Replace the side length of this square with **4 in.** and find the **area**.



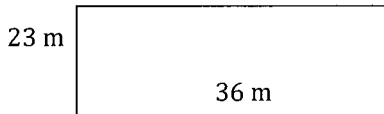
FORMULA  
 SUBSTITUTE  
 SOLVE  
 LABEL

2. Complete the table for each of the given figures.



Length of Rectangle	Width of Rectangle	Rectangle's Area Written as an Expression	Rectangle's Area as a Number

3. Find the **perimeter** of this quadrilateral



4. Using the formula  $V = lwh$ , find the **volume** of a right rectangular prism when the **length** of the prism is 45 cm, the **width** is 12 cm, and the **height** is 10 cm.

FORMULA  
 SUBSTITUTE  
 SOLVE  
 LABEL

**Lesson 8: Properties Notes pages 7&8**

5. Demonstrate the property listed in the first column by filling in the third column of the table.

Commutative Property of Addition	$25 + c =$	
Commutative Property of Multiplication	$l \times w =$	
Additive Property of Zero	$h + 0 =$	
Multiplicative Identity Property of One	$v \times 1 =$	

**Review:**

Evaluate this expression:  $12 \times (3 + 2^2) \div 2 - 10$ .

Evaluate this expression:  $12 \times (3 + 2)^2 \div 2 - 10$ .